Trend Study 19B-3-02

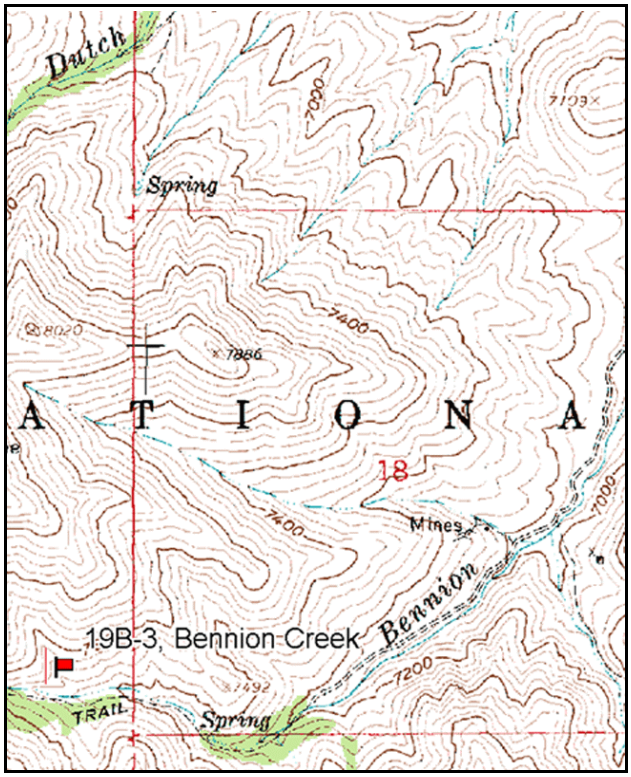
Study site name: Bennion Creek . Vegetation type: Mountain Brush .

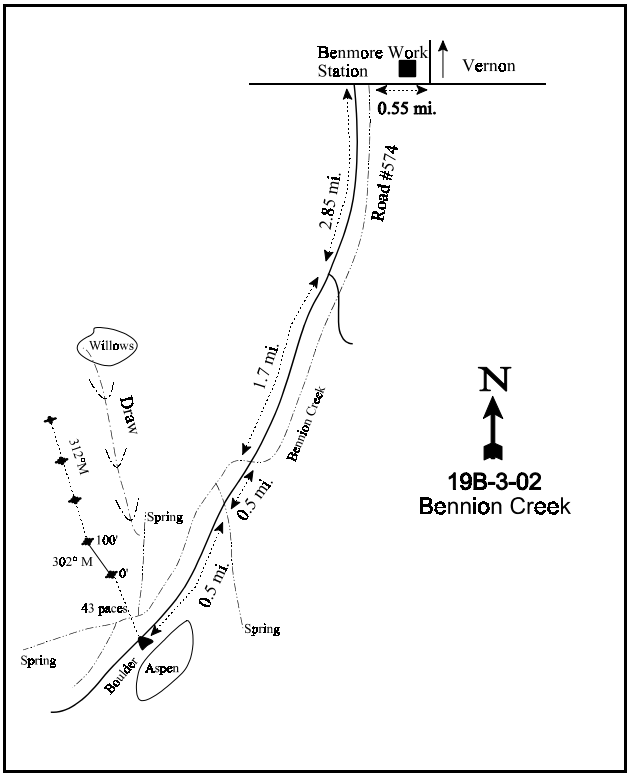
Compass bearing: frequency baseline 302 degrees magnetic (Lines 2-4 @ 312°M).

Frequency belt placement: line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft). Rebar: belt 5 on 4ft.

LOCATION DESCRIPTION

From the Benmore Work Station south of Vernon, travel west 0.55 miles to the intersection with the Forest Service road #574. Turn left and go south 2.85 miles to a fork. Bear right and go 1.7 miles to where Bennion Creek crosses the road. Proceed 0.5 miles to where a small drainage from a spring crosses the road. Continue up Bennion Creek 0.5 miles to the study site. Vehicle travel may be restricted in this last 0.5 mile. The site is located on a ridge above the point where two springs come together. From the road, the 0-foot baseline stake is 43 paces northwest. A red browse tag, number 3979, is attached to the 0-foot baseline stake.





Map Name: Dutch Peak

Diagrammatic Sketch

Township 10S , Range 6W , Section 13

GPS: NAD 27, UTM 12S 4422914 N 375147 E

DISCUSSION

Bennion Creek - Trend Study No. 19B-3

The Bennion Creek study is typical of deer summer range found on the Sheeprock Mountains. The study samples a low growing, mountain brush community at an elevation of 7,600 feet. The site has an easterly aspect and a 15-25% percent slope. The transect was placed close to the bottom of the slope just above Bennion Creek. A moderately large aspen stand and some relatively dense thickets of chokecherry and serviceberry provide cover nearby. At the time of study establishment in 1983, several deer were observed in the immediate area. In 1997, several cows were observed just east of the site grazing along the creek. On the immediate site, wildlife use has been light. Pellet group transect data collected on site in 2002 estimated 11 deer days use/acre (28 ddu/ha) and less than one elk day use/acre (2 edu/ha). Cattle use was estimated at 21 days use/acre (52 cdu/ha). The deer and elk sign appeared to be mostly from spring and early summer.

Soils are loam in texture and have a slightly acidic reactivity (pH of 6.5). Soil is relatively shallow with angular shaped granite or other igneous rocks on the surface. The effective rooting depth was estimated at 12 inches and average soil temperature was 57°F in 1997. Some soil movement is apparent, but appears minimal. Abundant vegetation and litter cover have prevented excessive runoff and soil loss on this study in the past. Due to drought in 2002 however, vegetation and litter both declined leaving a moderately high proportion of the soil surface bare (27%). Rock and pavement are abundant and armor the surface, which also helps minimize erosive events. The erosion condition class was determined as stable to slight in 2002.

Saskatoon serviceberry and mountain big sagebrush are the key browse species on this site providing nearly 40% of the browse cover in 1997 and 2002. Estimated density for serviceberry was 700 plants/acre in 1997 and 620 in 2002. Age structure has shifted from largely a young population in 1983 and 1989, to more mature and decadent in 1997 and 2002. Percent decadence peaked at 37% in 1997, decreasing to 23% in 2002. Vigor was normal throughout the entire population in 1983 and 1989. In 1997 and 2002, 17% and 14% of the population respectively displayed poor vigor. Average height measurements are similar over all years at about three feet. Utilization was light to moderate in 1983 and 1989, increasing to moderate to heavy in 1997 and 2002. Very few leaders could be found on serviceberry plants in 2002. Mountain big sagebrush density was estimated to be 940 plants/acre in 1997 and 860 in 2002. This is largely a mature and decadent population with few seedling and young plants. Decadence has ranged from 25-30%, except in 1989, when no decadent plants were sampled. The percentage of the population in poor vigor peaked in 1997 at 21%, slightly decreasing to 16% in 2002. Crickets were abundant on the site in 2002 and were noted as having defoliated many of the sagebrush and low rabbitbrush on the site. Annual sagebrush leaders averaged just over one inch in 2002.

Mountain snowberry, although having a lower wildlife preference, is the most abundant browse on the site. Snowberry density was estimated at 3,620 plants/acre in 1997, decreasing to just under 3,000 plants/acre in 2002. The decline in density is largely the result of the loss of the young age class in 2002. The snowberry population on this site is best categorized as small statured, mature plants that have been lightly utilized. There is also a fairly abundant population of mountain lover on the site. Density was estimated at 1,560 plants/acre in 1997, increasing to 1,740 plants/acre in 2002. This mostly mature population is very small statured averaging only four inches in height in 2002. Other shrubs sampled include black sagebrush, stickyleaf low rabbitbrush, whorled buckwheat, Oregon grape, and prickly pear cactus.

Grasses are dominated by a variety of perennial species including spike fescue, mutton bluegrass, oniongrass, and bluebunch wheatgrass. Sum of nested frequency for grasses increased in 1997, but declined in 2002 with drought conditions. Most of the perennial grass species declined in nested frequency in 2002, with oniongrass showing the largest decline. Bluebunch wheatgrass was the only species to significantly increase in 2002, although spike fescue provides one-half of the total grass cover. Grasses had been heavily utilized when the site was read in 2002, probably more by crickets than anything else.

Forbs were very diverse and abundant in 1983. Since then, the forb component has steadily declined in abundance, especially between 1997 and 2002, when perennial forb sum of nested frequency declined by 84% due to drought conditions. Prior to 2002, the most abundant perennial forb species included wild onion, tapertip hawksbeard, aster, and lomatium. Annual forbs were in relatively low abundance and included blue-eyed Mary, slenderleaf collomia, and pale alyssum.

1983 APPARENT TREND ASSESSMENT

Soil trend appears stable. However, this soil would rapidly erode if vegetation or litter cover were to be depleted. Both the browse and herbaceous understory trends appear stable with healthy, perhaps even expanding, populations of shrubs, grasses, and forbs.

1989 TREND ASSESSMENT

An increase in pavement cover has lead to a decrease in percent bare ground from 27% in 1983 to 15% in 1989. Soil movement appears to be occurring, but is not severe due to adequate amounts of vegetation and litter. The soil trend is stable. The browse populations have increased in density since 1983. Serviceberry and mountain big sagebrush show slight increases in density, while mountain big sagebrush decadence improved from 25% to 0% with lighter use. The population of snowberry increased significantly due to the abundance of young plants in 1989. Trend for browse is slightly up. Sum of nested frequency for grasses and forbs is nearly identical to that of 1983. The herbaceous understory is diverse and vigorous which leads to a stable trend.

TREND ASSESSMENT
soil - stable (3)
browse - slightly up (4)
herbaceous understory - stable (3)

1997 TREND ASSESSMENT

Bare ground declined to 7%, as vegetation and litter cover are abundant. Soil erosion is minimal as a result. Soil trend is slightly up. Saskatoon serviceberry density appears stable but the percentage of plants with poor vigor increased, and nearly one-half of the population was heavily browsed. The mountain big sagebrush population could be declining with one-third of the population classified as decadent. This leads to a slightly downward browse trend. Perennial grass sum of nested frequency has increased since 1989 with several species including spike fescue and oniongrass showing significant increases. Perennial forb sum of nested frequency has declined since 1989 accounting for most of the decrease in perennial herbaceous understory sum of nested frequency. Herbaceous understory trend is stable.

TREND ASSESSMENT
soil - slightly up (4)
browse - slightly downward (2)
herbaceous understory - stable overall, slightly up for grasses and slightly down for forbs (3)

2002 TREND ASSESSMENT

Trend for soil is down. Drought conditions in 2002 resulted in a large decline in herbaceous vegetation and litter cover and a subsequent increase in bare ground. With less protective cover on the soil surface, litter and surface rock movement was apparent. The erosion condition classification was stable to slight. Trend for browse is stable. The key forage species, serviceberry and mountain big sagebrush, have nearly stable densities, improved vigor, and lower decadence. These are very positive signs considering the drought conditions in 2002. Snowberry declined in density with the loss of the young age class in 2002, but this is not unexpected due to the drought conditions. The number of mature snowberry slightly increased in association with light use. Trend for the herbaceous understory is down. Herbaceous perennials, especially forbs, were much less abundant in 2002 with drought. Bluebunch wheatgrass was the only important herbaceous species to increase in nested frequency in 2002.

TREND ASSESSMENT
soil - down (1)
browse - stable (3)
herbaceous understory - down (1)

HERBACEOUS TRENDS --
Herd unit 19B, Study no: 3

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
G	Agropyron spicatum	a49	a48	a70	b147	23	24	32	59	1.90	2.64
G	Agropyron trachycaulum	ab13	b14	a1	a-	7	8	1	-	.00	-
G	Bromus carinatus	c57	c53	b33	a3	26	28	14	1	.36	.03
G	Bromus tectorum (a)	-	-	4	-	-	-	2	-	.03	-
G	Carex spp.	ab11	b26	a-	a6	4	8	-	2	-	.18
G	Leucopoa kingii	a87	a84	b137	ab124	33	37	54	52	6.78	4.69
G	Melica bulbosa	a26	a26	b109	a22	12	16	46	11	2.29	.27
G	Phleum pratense	-	-	3	-	-	-	1	-	.03	-
G	Poa fendleriana	b147	b140	ab120	a106	58	61	47	43	3.48	1.40
G	Poa pratensis	14	13	13	-	6	5	4	-	.36	-
G	Poa secunda	ab13	b29	b31	a6	6	14	13	3	.57	.01
G	Stipa lettermani	5	7	5	1	2	4	2	1	.06	.00
Total for Annual Grasses		0	0	4	0	0	0	2	0	0.03	0
Total for Perennial Grasses		422	440	522	415	177	205	214	172	15.86	9.25
Total for Grasses		422	440	526	415	177	205	216	172	15.90	9.25
F	Achillea millefolium	3	-	3	-	1	-	1	-	.03	-
F	Agoseris glauca	a5	c69	b23	ab8	3	38	13	4	.07	.04
F	Alyssum alyssoides (a)	-	-	b79	a-	-	-	30	-	.15	-
F	Allium spp.	d202	b121	c160	a-	78	59	62	-	.79	-
F	Arabis spp.	-	6	1	-	-	3	1	-	.01	-
F	Artemisia ludoviciana	4	1	10	9	2	1	4	3	.60	.21
F	Astragalus cibarius	c60	c59	b17	a-	28	27	8	-	.26	-
F	Aster spp.	ab91	c115	b72	a38	33	45	24	16	1.04	.43

Type	Species	Nested Frequency				Quadrat Frequency				Average Cover %	
		'83	'89	'97	'02	'83	'89	'97	'02	'97	'02
F	Balsamorhiza sagittata	$_{ab}$18	$_{b}$26	$_{a}$5	$_{a}$3	7	15	2	3	.66	.28
F	Castilleja linariaefolia	$_{ab}$7	$_{ab}$3	$_{b}$10	$_{a}$-	4	2	6	-	.05	-
F	Calochortus nuttallii	2	3	8	-	1	2	4	-	.02	-
F	Chaenactis douglasii	1	-	1	-	1	-	1	-	.00	-
F	Cirsium spp.	$_{c}$29	$_{ab}$5	$_{b}$7	$_{a}$-	18	4	5	-	.34	-
F	Collomia linearis (a)	-	-	$_{b}$79	$_{a}$-	-	-	33	-	.24	-
F	Comandra pallida	$_{b}$35	$_{b}$35	$_{a}$-	$_{b}$18	13	15	-	7	-	.16
F	Collinsia parviflora (a)	-	-	$_{b}$83	$_{a}$-	-	-	32	-	.16	-
F	Crepis acuminata	$_{c}$138	$_{c}$140	$_{b}$86	$_{a}$1	61	70	40	1	2.53	.00
F	Cynoglossum officinale	-	-	-	3	-	-	-	1	-	.00
F	Delphinium nuttallianum	$_{c}$31	$_{a}$-	$_{b}$13	$_{a}$-	18	-	9	-	.04	-
F	Epilobium brachycarpum (a)	-	-	$_{b}$25	$_{a}$8	-	-	10	3	.07	.04
F	Erysimum asperum	$_{b}$15	$_{a}$-	$_{a}$-	$_{a}$-	8	-	-	-	-	-
F	Erigeron divergens	4	1	8	-	2	1	3	-	.09	-
F	Eriogonum racemosum	$_{b}$49	$_{b}$42	$_{a}$6	$_{a}$12	27	21	2	6	.04	.25
F	Eriogonum umbellatum	$_{b}$40	$_{b}$38	$_{a}$13	$_{a}$3	16	19	6	1	.17	.00
F	Fritillaria pudica	2	-	-	-	1	-	-	-	-	-
F	Hackelia patens	2	-	2	-	1	-	1	-	.00	-
F	Holosteum umbellatum (a)	-	-	5	-	-	-	2	-	.01	-
F	Hydrophyllum capitatum	$_{b}$28	$_{a}$-	$_{a}$-	$_{a}$-	14	-	-	-	-	-
F	Lactuca serriola	-	-	2	-	-	-	1	-	.00	-
F	Lithospermum spp.	-	-	-	2	-	-	-	1	.00	.03
F	Lomatium spp.	$_{c}$149	$_{c}$163	$_{b}$59	$_{a}$-	66	67	29	-	.91	-
F	Lupinus caudatus	$_{c}$59	$_{b}$23	$_{a}$-	$_{a}$-	29	12	-	-	-	-
F	Lupinus sericeus	$_{b}$29	$_{ab}$19	$_{a}$11	$_{a}$2	14	9	5	1	.33	.15
F	Machaeranthera canescens	6	1	11	-	3	1	4	-	.03	-
F	Microsteris gracilis (a)	-	-	$_{b}$20	$_{a}$-	-	-	10	-	.05	-
F	Orobanche uniflora	2	-	-	-	1	-	-	-	-	-
F	Phlox longifolia	$_{b}$17	$_{b}$32	$_{b}$18	$_{a}$-	11	14	8	-	.21	-
F	Polygonum douglasii (a)	-	-	$_{b}$67	$_{a}$-	-	-	26	-	.22	-
F	Senecio integerrimus	$_{a}$7	$_{b}$43	$_{b}$44	$_{a}$3	4	22	21	1	.54	.03
F	Tragopogon dubius	-	1	1	-	-	1	1	-	.03	-
F	Veronica biloba (a)	-	-	8	-	-	-	3	-	.01	-
F	Wyethia amplexicaulis	$_{a}$-	$_{ab}$3	$_{b}$21	$_{a}$1	-	2	7	1	.91	.15
Total for Annual Forbs		0	0	366	8	0	0	146	3	0.92	0.04
Total for Perennial Forbs		1035	949	612	100	465	450	268	45	9.78	1.72
Total for Forbs		1035	949	978	108	465	450	414	48	10.72	1.76

Values with different subscript letters are significantly different at alpha = 0.10

BROWSE TRENDS --
Herd unit 19B, Study no: 3

Type	Species	Strip Frequency '97	Strip Frequency '02	Average Cover % '97	Average Cover % '02
B	Amelanchier alnifolia	32	28	3.65	3.19
B	Artemisia nova	8	1	.44	-
B	Artemisia tridentata vaseyana	40	34	4.48	3.56
B	Chrysothamnus viscidiflorus viscidiflorus	4	3	.38	.03
B	Eriogonum heracleoides	18	27	.27	1.31
B	Juniperus osteosperma	1	0	-	-
B	Mahonia repens	16	3	.75	.04
B	Opuntia spp.	3	5	.15	.54
B	Pachistima myrsinites	21	26	.70	.87
B	Pseudotsuga menziesii	0	1	-	-
B	Rosa woodsii	21	7	1.88	.21
B	Symphoricarpos oreophilus	68	61	9.90	6.23
B	Tetradymia canescens	0	1	-	-
Total for Browse		232	197	22.63	16.04

CANOPY COVER -- LINE INTERCEPT
Herd unit 19B, Study no: 3

Species	Percent Cover '97	Percent Cover '02
Amelanchier alnifolia	-	5.17
Artemisia tridentata vaseyana	-	5.08
Chrysothamnus viscidiflorus viscidiflorus	-	.17
Eriogonum heracleoides	-	1.00
Mahonia repens	-	.02
Opuntia spp.	-	.15
Pachistima myrsinites	-	.25
Rosa woodsii	-	.25
Symphoricarpos oreophilus	-	8.00

Key Browse Annual Leader Growth
Herd unit 19B , Study no: 3

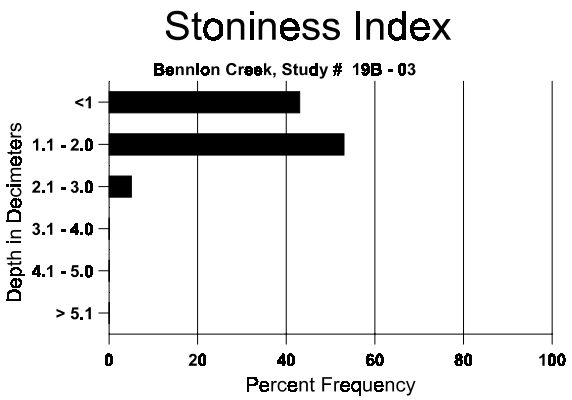
Species	Average leader growth (in) '02
Artemisia tridentata vaseyana	1.1

BASIC COVER --
Herd unit 19B, Study no: 3

Cover Type	Nested Frequency		Average Cover %			
	'97	'02	'83	'89	'97	'02
Vegetation	354	299	3.50	8.50	49.18	26.78
Rock	265	281	12.00	10.25	12.07	15.73
Pavement	266	328	2.50	13.75	5.51	15.27
Litter	386	360	55.50	52.75	50.44	32.01
Cryptogams	31	-	0	0	.17	0
Bare Ground	200	313	26.50	14.75	7.03	27.78

SOIL ANALYSIS DATA --
Herd Unit 19B, Study no: 3, Bennion Creek

Effective rooting depth (in)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.2	56.8 (13.2)	6.5	43.3	30.7	26.0	4.5	12.3	307.2	0.6



PELLET GROUP FREQUENCY --
Herd unit 19B, Study no: 3

Type	Quadrat Frequency	
	'97	'02
Rabbit	1	-
Elk	1	-
Deer	8	5
Cattle	5	10

Pellet Transect	
Pellet Groups per Acre '02	Days Use per Acre (ha) '02
-	-
9	1 (2)
148	11 (28)
252	21 (52)

BROWSE CHARACTERISTICS --
Herd unit 19B, Study no: 3

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier alnifolia																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	5	1	-	-	-	-	-	-	-	6	-	-	-	400			6
	89	4	1	-	1	-	-	-	-	-	6	-	-	-	400			6
	97	-	1	-	2	-	-	-	-	-	2	1	-	-	60			3
	02	1	1	-	-	-	-	-	-	-	2	-	-	-	40			2
M	83	1	3	-	-	-	-	-	-	-	4	-	-	-	266	33	21	4
	89	1	4	-	-	-	-	-	-	-	5	-	-	-	333	34	19	5
	97	-	1	5	1	7	5	-	-	-	15	4	-	-	380	33	35	19
	02	-	6	15	-	-	3	-	-	-	24	-	-	-	480	34	35	24
D	83	-	1	-	-	-	-	-	-	-	-	1	-	-	66			1
	89	1	1	-	-	-	-	-	-	-	2	-	-	-	133			2
	97	-	7	3	-	1	2	-	-	-	6	1	-	6	260			13
	02	-	3	1	-	-	1	-	-	-	2	-	-	3	100			5
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	80			4
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	45%	00%	00%	+15%
'89	46%	00%	00%	-19%
'97	49%	43%	17%	-11%
'02	32%	65%	10%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	732	Dec:	9%
	'89	866		15%
	'97	700		37%
	'02	620		16%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia nova																		
Y	83	1	-	-	-	-	-	-	-	-	1	-	-	-	66			1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	1	-	-	-	-	-	-	-	-	1	-	-	-	66	14	23	1
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	9	-	-	-	-	-	-	-	-	8	-	1	-	180	12	22	9
	02	3	-	-	-	-	-	-	-	-	3	-	-	-	60	8	26	3
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	2	-	-	-	-	-	-	-	1	-	-	2	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	17%	00%	25%	-75%
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	132	Dec:	0%
	'89	0		0%
	'97	240		25%
	'02	60		0%

Artemisia tridentata vaseyana																		
Y	83	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	89	1	-	-	-	-	-	-	-	-	-	-	1	-	66			1
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	83	1	3	-	-	-	-	-	-	-	4	-	-	-	266	21	51	4
	89	7	1	1	-	-	-	-	-	-	9	-	-	-	600	21	35	9
	97	24	6	-	1	1	-	-	-	-	30	-	2	-	640	24	39	32
	02	15	7	5	-	-	-	-	-	-	25	2	-	-	540	19	35	27
D	83	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	11	3	-	-	-	-	-	-	-	5	1	-	8	280			14
	02	6	5	1	-	-	-	-	-	-	5	-	-	7	240			12
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	360			18
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	240			12

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	38%	00%	00%	+20%
'89	10%	10%	10%	+29%
'97	21%	00%	21%	- 9%
'02	28%	14%	16%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	532	Dec:	25%
	'89	666		0%
	'97	940		30%
	'02	860		28%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	133	16	10	2
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60	16	28	3
	02	3	-	-	-	-	-	-	-	-	2	-	1	-	60	10	15	3
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	-40%
'97	00%	00%	25%	-25%
'02	00%	00%	33%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	0	Dec:		0%
'89	133			0%
'97	80			25%
'02	60			0%

Eriogonum heracleoides																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	23	-	-	2	-	-	1	-	-	26	-	-	-	520	12	13	26
	02	36	6	4	-	-	-	-	-	-	45	-	1	-	920	6	13	46
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1
	02	3	-	-	-	-	-	-	-	-	3	-	-	-	60			3
X	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	03%	+31%
'02	12%	08%	02%	

Total Plants/Acre (excluding Dead & Seedlings)			
'83	0	Dec:	0%
'89	0		0%
'97	680		3%
'02	980		6%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus osteosperma																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	2	-	-	-	-	-	-	-	-	-	2	-	-	40	-	-	2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	40		-
	'02	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Mahonia repens																		
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	32	-	-	-	-	-	-	-	-	32	-	-	-	640			32
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	64	-	-	-	-	-	-	-	-	64	-	-	-	1280	4	6	64
	02	6	-	-	-	-	-	-	-	-	6	-	-	-	120	2	3	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

%Change

-94%

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	1920		-
	'02	120		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	7	-	-	-	-	-	-	-	-	7	-	-	-	140	8	32	7
	02	6	-	-	-	-	-	-	-	-	6	-	-	-	120	6	33	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'83	00%	00%	00%
'89	00%	00%	00%
'97	00%	00%	00%
'02	00%	00%	00%

%Change

-14%

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	140		-
	'02	120		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pachistima myrsinites																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	8	-	-	-	-	-	-	-	-	8	-	-	-	533			8
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	97	18	-	-	1	-	-	-	-	-	19	-	-	-	380			19
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	83	11	-	-	-	-	-	-	-	-	11	-	-	-	733	5	4	11
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	40	-	-	15	-	-	4	-	-	59	-	-	-	1180	5	12	59
	02	64	-	9	2	12	-	-	-	-	87	-	-	-	1740	4	7	87

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	-82%
'89	00%	00%	00%	+91%
'97	00%	00%	00%	+10%
'02	14%	10%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	733	Dec:	-
	'89	133		-
	'97	1560		-
	'02	1740		-

Pseudotsuga menziesii																		
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	0%
	'89	0		0%
	'97	0		0%
	'02	20		100%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Rosa woodsii																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	13	-	-	-	-	-	-	-	-	13	-	-	-	260			13
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	37	-	-	-	-	-	-	-	-	37	-	-	-	740			37
	02	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	16	-	-	1	-	-	-	-	-	17	-	-	-	340	12	17	17
	02	25	11	-	-	-	-	-	-	-	36	-	-	-	720	5	6	36
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	3	-	-	-	-	-	-	-	-	2	-	-	1	60			3
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	02%	-28%
'02	27%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'83	0	Dec:		0%
'89	0			0%
'97	1140			5%
'02	820			0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
S	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	2	-	-	-	-	-	-	-	-	2	-	-	-	133			2
	97	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	02	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	83	16	-	-	-	-	-	-	-	-	5	11	-	-	1066			16
	89	43	2	-	10	-	-	4	-	-	57	-	2	-	3933			59
	97	28	3	-	7	-	-	-	-	-	37	-	-	1	760			38
	02	3	-	-	-	-	-	-	-	-	2	-	1	-	60			3
M	83	21	-	-	-	-	-	-	-	-	3	18	-	-	1400	24	21	21
	89	23	-	-	-	-	-	-	-	-	23	-	-	-	1533	30	31	23
	97	78	19	-	27	5	-	-	-	-	119	3	7	-	2580	16	29	129
	02	127	-	-	6	-	-	3	-	-	110	5	21	-	2720	14	22	136
D	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	89	7	1	-	-	-	-	-	-	-	8	-	-	-	533			8
	97	9	2	2	1	-	-	-	-	-	7	-	-	7	280			14
	02	8	-	-	2	-	-	-	-	-	7	-	-	3	200			10

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	+59%
'89	03%	00%	02%	-40%
'97	16%	01%	08%	-18%
'02	00%	00%	17%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	2466	Dec:	0%
	'89	5999		9%
	'97	3620		8%
	'02	2980		7%

Tetradymia canescens

M	83	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	89	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	02	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'83	00%	00%	00%	
'89	00%	00%	00%	
'97	00%	00%	00%	
'02	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'83	0	Dec:	-
	'89	0		-
	'97	0		-
	'02	20		-